DAKOTA SKIES

NATIONAL WEATHER SERVICE
BISMARCK, NORTH DAKOTA

Inside this issue:

Weather-Ready Nation:
Saving Lives and Livelihoods

NWS Bismarck **Building a weather-ready nation** **Fall 2013**

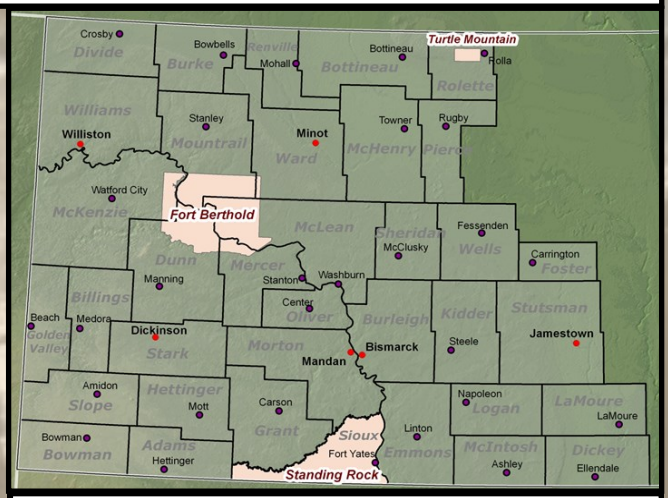
Welcome Message

by Adam Jones

Greetings! Thank you for taking a stop by *Dakota Skies*. This is a semiannual newsletter produced each fall and spring by a team of employees at the National Weather Service (NWS) in Bismarck, ND.

In this edition you will find useful information to help prepare for the upcoming **winter weather season**. Additionally, there are interesting articles about **record rain, the winter climate outlook, how we make a forecast, staff spotlights and safety tips.**

For comments, suggestions, or to report snowfall, please call (701) 250-4224

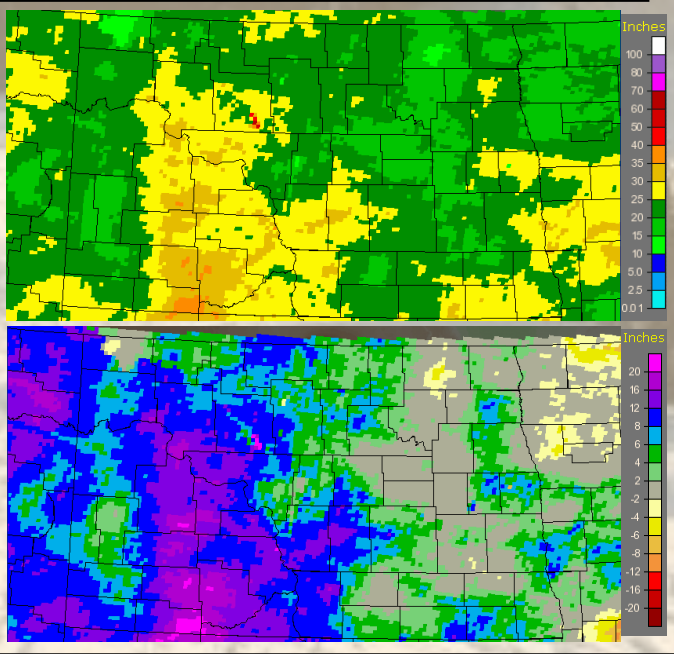


Map of the NWS Bismarck County Warning Area (CWA). We issue watches, advisories, warnings and forecasts for 36 counties and three Tribal Nations in western and central North Dakota. The office is staffed 24 hours a day, seven days a week.

One Word to Describe 2013: WET!

by Patrick Ayd

After a dry 2012, much of western and central North Dakota has reversed the trend and received well above normal precipitation in 2013. As shown at right, locations along and west of US Highway 83 have received the most precipitation through October. Some areas of the southwest have seen precipitation totals so far this year of 30 to 35 inches or more (upper image). This is about 12 to 16 inches above normal (lower image). The wettest periods of 2013 were May, September and October. May was exceptionally wet with many locations receiving record breaking rainfall.



Winter Weather Jargon & Safety

By Ken Simosko

Jargon

Blizzard Warning: Issued for winds of 35 mph or higher with visibility frequently below ¼ mile in snow and/or blowing snow. These conditions are expected to continue for three (3) hours or longer.

Winter Storm Warning: Issued for six inches of snow or more within 12 hours; or Eight inches or more within 24 hours or combination events (sleet, freezing rain, blowing snow).

Winter Weather Advisory: Issued for combination events (snow with freezing rain or sleet, or snow with wind and blowing snow) when warning criteria is not expected to be met. Generally, Winter Weather Advisories are issued for 3-5 inches of snow.

Freezing Rain Advisory: Issued when freezing rain will cause roads and sidewalks to become slippery. Less than a quarter inch of ice accumulation is expected.

Ice Storm Warning: Significant and damaging freezing rain with one quarter inch or more of ice accumulation is expected.

Wind Chill Advisory: A wind chill index between 25 below zero and 39 below zero.

Wind Chill Warning: A wind chill index of 40 below zero or colder.

Safety – Before the Storm Strikes!

At Home and Work: Have available: Flashlight and extra batteries, a battery-powered NOAA Weather Radio, extra food and water, extra medicine and baby items, first-aid supplies, heating fuel, emergency heat source, fire extinguisher and smoke alarm.

In Vehicles: Check and winterize your vehicle, carry a winter storm survival kit, keep your gas tank near full, avoid traveling alone, and let someone know when and where you are traveling.

On the Farm/Pets: Move animals to sheltered areas; provide extra feed and water.

Safety – If you get caught in the storm!

Outside: Find shelter – try to stay dry and cover all exposed body parts. If No Shelter – build a windbreak or snow cave for protection from the wind; build a fire for heat and to attract attention; place rocks around the fire to absorb and reflect heat. Melt snow for drinking water; keep in mind eating snow will also lower your body temperature.

In a Vehicle: Stay in your vehicle – you will become quickly disoriented in wind-driven snow and cold. Run the motor about 10 minutes each hour for heat. Open the window a little for fresh air to avoid carbon monoxide poisoning. Make sure the exhaust pipe is not blocked. Be Visible to Rescuers - turn on the dome light at night when running the engine. Tie a cloth, preferably red, to your antenna or door. After snow stops falling, raise the hood to indicate you need help. Exercise - from time to time, move arms, legs, fingers and toes vigorously to keep blood circulating and to stay awake.

Inside: Stay inside – when using alternate heat from a fireplace, wood stove, space heater, etc., ensure proper ventilation. No heat available? Close off unneeded rooms. Stuff towels or rags in cracks under doors; Cover windows at night; eat and drink as food provides the body with energy for producing its own heat.

NOAA Weather Radio All Hazards acts as an alarm clock for severe winter weather. It alerts you immediately that a warning has been issued for your area.

"Never leave home before checking the latest forecast and road conditions."

Severe Winter Weather Risk Definitions

Outlook
Winter storm conditions are possible in the next 2 to 7 days.

Watch
Winter storm conditions are possible within the next 24-48 hours.

Advisory
Winter weather conditions that can be hazardous and cause significant inconvenience, but are usually not life threatening is expected to begin within the next 24 hours.

Warning
Life threatening winter weather situations are imminent or will begin within 24 hours.

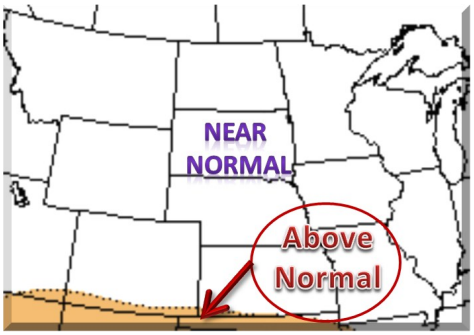
Climate Outlook for December 2013 through February 2014

By Michael Matthews

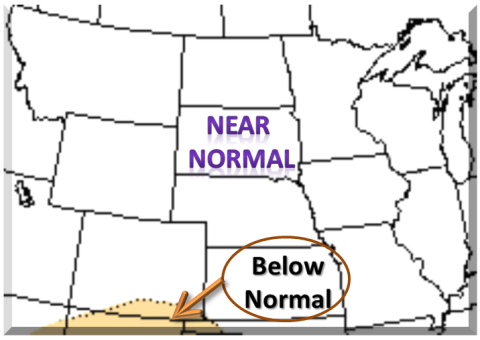
Near normal precipitation is expected for the months of December, January and February. This would suggest that near normal snowfall is expected across western and central North Dakota. Near normal temperatures are also forecast for the winter months. One major contributor to the current winter outlook is the lack of El Nino or La Nina conditions forecast through the spring of 2014.

Winter Outlook (Dec 2013 – Feb 2014)

Temperature



Precipitation



Winter Months of December, January, and February

	Climate Normals		Last Dec - Feb	
	Average Temperature (°F)	Snowfall (inches)	Average Temperature (°F)	Snowfall (inches)
Bismarck	15.7	26.3	16.9	18.1
Dickinson	18.2	15.6	19.9	Missing
Jamestown	13.1	25.3	12.7	20.1
Minot	14.9	23.4	13.2	25.6
Williston	13.9	25.2	15.8	16.0

"Over a million weather related traffic accidents occur each year in the U.S.A "

www.facebook.com/US.NationalWeatherService.Bismarck.gov

www.twitter.com/NWSBismarck

www.youtube.com/NWSBismarck

Staff Spotlight: Eric Hayner

Hello, my name is Eric Hayner. I was born and raised in Michigan. I recently transferred from the Department of Defense at Selfridge ANGB in Michigan where I was the ATCALS maintenance supervisor. I am currently the Electronics Systems Analyst (ESA) at the NWS Bismarck office. Prior to my time in Michigan I respectfully served 6 years in the United States Air Force as an electronics specialist and was stationed at Norton AFB in California and Yokota AFB in Japan. I have a great passion for the outdoors. I am really enjoying the fishing in North Dakota! I also enjoy playing pool and riding my Harley. Once I finally get settled in, I hope to explore the landscape and history of North Dakota.

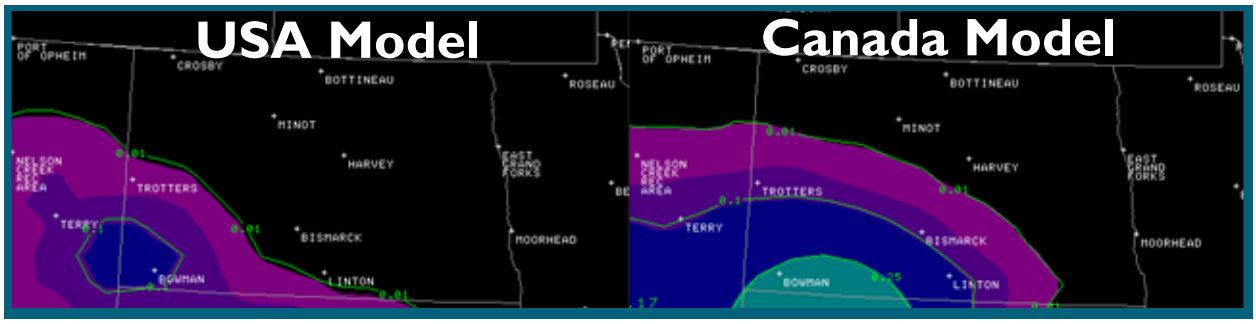
How the NWS makes a Forecast

By Tony Merriman

You may have wondered at some point how the NWS makes a forecast. Do we randomly throw darts at a dart board to make our predictions? No, but it may seem like it some days.

So how do we forecast a differentially heated fluid that is rotating with the Earth and is trying to find some kind of equilibrium (a.k.a. the atmosphere)? We begin by taking 3-D observations of the atmosphere. This is accomplished by a combination of satellite data and coordinated twice-daily world-wide balloon launches. There are over 800 balloon launch sites globally. One of those sites is in Bismarck, ND with balloon launches at 6am and 6pm CDT.

Once the 3-D observations are collected, they are sent to numerical weather modeling centers in the U.S., Canada, and Europe. The centers input the observations into complex sets of mathematical equations that create weather predictions (model output). There are often differences between the different model outputs (Image below). That's where meteorologists come into play.



NWS meteorologists analyze the model output and create a forecast based on experience, model trends, and collaborative efforts with surrounding offices. There are 122 NWS offices across the U.S., Caribbean, and Pacific Islands. All 122 offices "draw" the forecast using a graphical interface called the Graphical Forecast Editor (GFE).

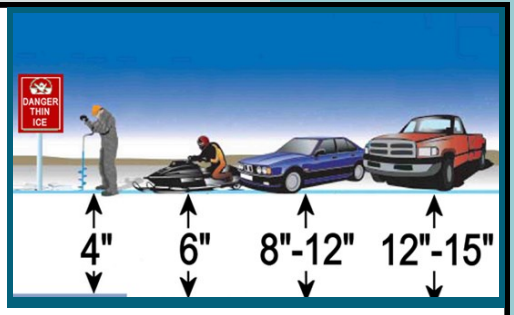
The forecast from all 122 NWS offices create a national forecast database that can be viewed by anybody with an internet connection. The highly detailed national forecast map is available online at http://preview.weather.gov/graphical/. If you prefer a point forecast for any location in the U.S., just type your town into the search feature in the upper left corner of weather.gov/bismarck.

Severe Winter Weather Awareness Week

By Nathan Heinert

Tuesday, November 5: Outdoor Safety

The North Dakota outdoors can be great fun in the winter months, but safety must still be practiced. Be cautious when ice fishing on lakes or rivers; Ice does not freeze evenly. Wear several layers of loose fitting clothing that covers all exposed skin when enjoying outdoor recreational activities. While shoveling snow can be good exercise, it can also be deadly for those who take on more than they can handle. Know your limits, and help elderly neighbors.



(Source: North Dakota Game and Fish Department)

Wednesday, November 6: Health and Fire Safety

It is smart to have extra heating fuel and heating equipment on-hand in case of a power outage. However, multiple heating sources pose an additional risk for house fires. Keep fire extinguishers on hand in case of an emergency. Holiday decorations can become a significant fire hazard if not used carefully. An estimated 250 home fires involving Christmas trees and another 170 involving holiday lights and other decorative lighting occur each year across the U.S.

Thursday, November 7: Indoor Safety

To prepare at home for a winter storm, assemble a disaster supply kit of drinking water, canned food, a non-electric can opener, first aid kit, battery-operated radio, fresh batteries, rock salt, and snow removal equipment. Have sufficient heating fuel and heating equipment in case the electricity is cut off. Make sure all fuel burning devices are well-vented to go outdoors, including your furnace and hot water heater. Carbon Monoxide (CO) poisoning kills more than 500 people in American each year. Install CO alarms inside your home to provide early warning of CO build-up.

Friday, November 8: Travel Safety

Vehicles should be winterized and equipped with a winter survival kit. Useful items to include in a survival kit are: extra clothing, blankets, high energy foods, a flashlight with new batteries, sand, and a shovel. If taking a trip, let someone know your departure time, estimated arrival time, and the route you will take. Bring a cell phone, and obey road closure and detour signs. Stay alert for snowplows, do not pass them, and let them do their job. If possible, avoid travel if road conditions are poor. Call 5-1-1 for road information from the North Dakota Department of Transportation. (Image 5)

Typical Winter Survival Kit *(Source: NOAA)*

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Weather-Ready Nation:
Saving Lives and Livelihoods

National Weather Service Mission Statement:

The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Brief National Weather Service History:

The National Weather Service has its beginnings in the early history of the United States. Weather has always been important to the citizenry of this country, and this was especially true during the 17th and 18th centuries. The beginning of the National Weather Service we know today started on February 9th, 1870, when President Ulysses S. Grant signed a joint resolution of Congress authorizing

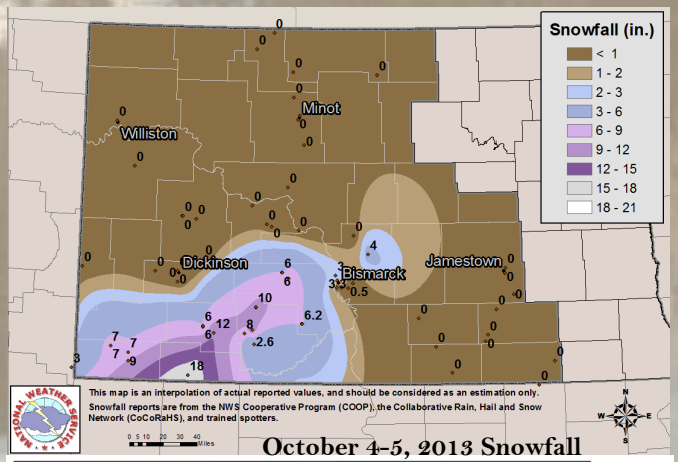
October 4-5, 2013 Winter Storm Review

By Patrick Ayd

A powerful early season winter storm, on October 4-5, brought significant snowfall to western South Dakota, southwest North Dakota and much of Wyoming. Nearly two feet of snow fell near Hettinger, North Dakota. The Black Hills of South Dakota received three to four feet of snow (upper image).

Strong winds, combined with wet snow, left thousands without power for up to two weeks. Unfortunately, one of the largest impacts of the storms was the loss of thousands of cattle across the Dakotas.

Early season winter storms in October are not unusual. Eight years ago to the date another significant early October winter storm impacted much of western and central North Dakota (lower image).



October 4-5, 2013 Snowfall